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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/536,845 | 05/31/2005 | Mark Thomas Johnson | NL021322US1 | 6221 |

24737 7590 05/19/2009

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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| EXAMINER | |
|---|---|
| CHOWDHURY, AFROZA Y | |
| ART UNIT | PAPER NUMBER |
| 2629 | |
| MAIL DATE | DELIVERY MODE |
| 05/19/2009 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/536,845 | JOHNSON ET AL. | |
| | Examiner | Art Unit | |
| | AFROZA Y. CHOWDHURY | 2629 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-12 and 14-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 14-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's amendment received on **November 14, 2008** has been entered. Claims 1-12 and 14-29 are currently pending. Applicant's arguments are addressed herein below.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 14 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 14, "**applying a voltage within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage to a light emitting element**" is not clear. What is a "**fusing voltage**"? What is a "**leakage threshold voltage**"?

Regarding claim 22, "**maintaining the voltage applied to each light emitting element to be above the first voltage and below the second voltage**" is not clear. What are "first voltage" and "second voltage"?

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-8 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sanford et al.** (US Patent 6,580,657) in view of **Andry et al.** (US Pub. 2003/0094616).

As to claims 1 and 14, Sanford et al. discloses a method for driving an organic LED display device having a first and a second electrode sandwiching an organic layer (fig. 1B(102)), col. 4, lines 3537) defining a plurality of light emitting elements (figs. 1(A-B), col. 3, lines 56-63), said method comprising:

applying a voltage within a specified voltage range (col. 7, lines 6-29), and

controlling the duty cycle of said light emitting element, so that a desired light intensity is emitted from said light emitting element (col. 6. lines 32-40).

Sanford et al. does not explicitly teach applying a voltage within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage to a light emitting element, within which voltage range the risk of short circuits between the electrodes is reduced.

Andry et al. teaches applying a voltage within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage to a light emitting element.within which voltage range the risk of short circuits between the electrodes is reduced ([0002], [0003], [0009], [0010]).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to use the idea of Andry et al. of applying certain voltage range for driving a light emitting element in order to modify the display device of Sanford et al. to make a display device where voltage needs to be applied within certain range in order to reduce the risk of short circuits between the electrodes of the light emitting diode (as best understood).

As to claims 2 and 15, Sanford et al. teaches a method where the duty cycle of the light emitting element is decreased in order to emit a desired light intensity without requiring an applied voltage below a specified lower limit (col. 7, lines 6-29).

As to claims 3 and 16, Sanford et al. teaches a method wherein a default duty cycle of the light emitting element is less than 100%, and wherein the duty cycle is increased in order to emit a desired light intensity without requiring an applied voltage above a specified upper limit (col. 9, lines 60 -67).

As to claim 4, Sanford et al. discloses a method comprising: determining an expected voltage change over time, required to maintain a constant drive current in the

light emitting element, and adjusting the duty cycle of said light emitting element accordingly (col. 6, lines 32-40).

As to claim 5, Sanford et al. teaches a method including: monitoring an average pixel voltage in the display, and adjusting the duty cycle of each light emitting element based on this average voltage (col. 6, lines 32-40).

As to claim 6, Sanford et al. teaches a method including: monitoring a voltage of a light emitting element, and adjusting the duty cycle of the light emitting element based on this voltage (col. 6, lines 32-40).

As to claim 7, Sanford et al. teaches a method wherein the duty cycle is controlled over each frame (col. 6, lines 32-40).

As to claim 8, Sanford et al. teaches a method where the duty cycle is controlled over a plurality of frames (col. 6, lines 32-40).

As to claim 9, Sanford et al. teaches a method wherein the display device is of active matrix type (col. 1, lines 31-36, col. 4, lines 21-24).

As to claim 10, Sanford et al. teaches a method wherein the duty cycle is controlled for each light emitting element individually (fig. 5).

As to claim 11, Sanford et al. teaches a method wherein the duty cycle is controlled for a plurality of light emitting elements jointly (fig. 1A, col. 4, lines 21-24).

As to claim 12, Sanford et al. teaches a method wherein the display device is of passive matrix type (col. 1, lines 25-30).

As to claim 17, Sanford et al. teaches a device wherein controlling means comprises a transistor connected between the light emitting element and the voltage applying means, and a duty cycle controller connected to the gate of the transistor (fig.5).

As to claim 18, Sanford et al. teaches a device where controlling means comprises a duty cycle controller connected to the voltage applying means (fig. 5).

As to claim 19, Sanford et al. teaches a device wherein said controlling means comprises a duty cycle controller connected to the other side of the light emitting element in relation to the voltage applying means (fig. 5).

As to claim 20, Sanford et al. teaches a device where voltage applying means comprises a power line and a drive transistor connected between the power line and the light emitting element (fig. 5).

As to claim 21, Sanford et al. teaches a device wherein a controlling means are arranged to jointly control the duty cycle for a plurality of light emitting elements (fig. 5).

As to claim 22, Sanford et al. teaches a display device comprising:

a plurality of light emitting elements (fig. 1A, col. 3, lines 56-63), and

a controller that is configured to control a voltage and duty cycle of each light emitting element (col. 5, lines 48-59), and

the controller is configured to control the duty cycle of each light emitting element to provide a desired light intensity while maintaining the voltage applied to each light emitting element to be above the first voltage and below the second voltage (col. 5, lines 48-59, col. 6, lines 6-15).

Sanford et al. does not explicitly teach a display device wherein the light emitting element exhibits a higher likelihood of fusing short circuits below a first voltage and higher likelihood of leakage current above a second voltage.

Andry et al. teaches applying a voltage within a specified voltage range that is above a fusing voltage and below a leakage threshold voltage to a light emitting

element.within which voltage range the risk of short circuits between the electrodes is reduced ([0002], [0003], [0009], [0010]).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to use the idea of Andry et al. of applying certain voltage range for driving a light emitting element in order to modify the display device of Sanford et al. to make a display device wherein the light emitting element exhibits a higher likelihood of fusing short circuits below a first voltage and higher likelihood of leakage current above a second voltage (as best understood).

As to claim 23, Sanford et al. discloses a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element (figs. 5, 6), and

a duty cycle transistor associated with each light emitting element that is in series with the drive transistor and the light emitting element (figs. 5, 6).

As to claim 24, Sanford et al. teaches a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element from a supply line (figs. 5, 6), and

one or more duty cycle switches that are configured to limit the supply line based on the duty cycle (figs. 5, 6).

As to claim 25, Sanford et al. teaches a display device including:

a drive transistor associated with each light emitting element that is configured to provide the voltage to the light emitting element via a series coupling between first and second supply lines (figs. 5, 6), and

one or more duty cycle switches that are configured to control at least one of the first and second supply lines based on the duty cycle (figs. 5, 6).

As to claim 26, Sanford et al. teaches a display device, wherein the first voltage is above -5 volts, and the second voltage is below 3 volts (col. 7, lines 27-28).

Sanford et al. does not specifically teach a display device, wherein the first voltage is above 4 volts, and the second voltage is below 11 volts.

However, it is obvious to one skill in the art to design a display device, wherein the first voltage is above 4 volts, and the second voltage is below 11 volts for some specific application.

Claims 27-29 are rejected the same as claims 5, 7, and 8, respectively.

### *Response to Arguments*

6. Applicant's arguments with respect to claims 1-12 and 14-29 have been considered but are moot in view of the new ground(s) of rejection.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AFROZA Y. CHOWDHURY whose telephone number is (571)270-1543. The examiner can normally be reached on 7:30-5:00 EST, 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AC
3/31/2009

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